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INTERPOPULATION KARYOTYPE DIFFERENCES IN AUSTRALIAN *IRIDOMYRMEX* OF THE *"DETECTUS"* GROUP (HYMENOPTERA: FORMICIDAE: DOLICHODERINAE)

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Abstract

A haploid number of nine was found in each of three population samples of the *"detectus"* group of the ant genus *Iridomyrmex*, but differences occurred in the morphology of the three smallest chromosomes, the remaining six large metacentrics being similar throughout.

INTRODUCTION

With the taxonomy and nomenclature of this ant group confused at present, it is uncertain whether or not the forms *"detectus"* and *"viridiaeneus"* are distinct species, or indeed what names to apply. Of the samples used in the present work, that from Beaumaris had the typical bicolourous *"detectus"* colouration and multi-entrance disc nest, while that from Euston was of the concolourous metallic blue *"viridiaeneus"* type with a simple single-entrance nest. The Peebinga sample was morphologically somewhat intermediate and had a multi-entrance disc nest.

METHODS AND MATERIALS

Cerebral ganglia and testes of pharate pupae from three localities (Peebinga, South Australia; Beaumaris, Victoria; Euston, New South Wales), pretreated for approximately 15 hours with a 0.05% solution of Colcemid (CIBA) in insect Ringer were made into Aceto-Orcein squash preparations.

OBSERVATIONS

A haploid number of nine was found for all three samples. Diploid metaphase plates from the Beaumaris, Victoria, sample show six larger metacentric pairs and three smaller acrocentric to metacentric pairs (Plate I, 2). Of the smaller chromosomes, one has the centromere in a markedly subterminal position, whereas, in the other two, short arms are barely visible. Using the criteria established by Levan, Fredga and Sandberg (1964), the first-mentioned small chromosome, with a value of r (ratio of long arm length to short arm length) falling in the 1.7 to 3.0 range, is a submetacentric (sm in their terminology) whereas the other two, with negligible short arms, are acrocentric (a).

Haploid metaphase plates, from a sample taken 11 miles WSW of Euston, N.S.W., on the other hand, show all three of the small chromosomes as having well developed short arms (Plate I, 1).

A number of rather poor diploid preparations from a sample taken 5 miles S of Peebinga, S.A., show short arms to be present on at least two pairs of the small chromosomes.

Arrangement of the chromosomes into groups based on their size and centromere position, as in Plate I, 3, yields four groups in the Beaumaris karyotype and three in that from Euston. Listing the groups alphabetically, the Beaumaris karyogram is thus:

Group A—chromosome No. 1
Group B—chromosomes No. 2 to 6
Group C—chromosome No. 7
Group D—chromosomes No. 8 to 9

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The same groups apply for the Euston karyogram, save that group C covers chromosomes No. 7 to 9, with no group D. Although in good metaphases further subdivision of the C group is possible, the three chromosomes are generally so similar that nomenclatural separation is unwise.

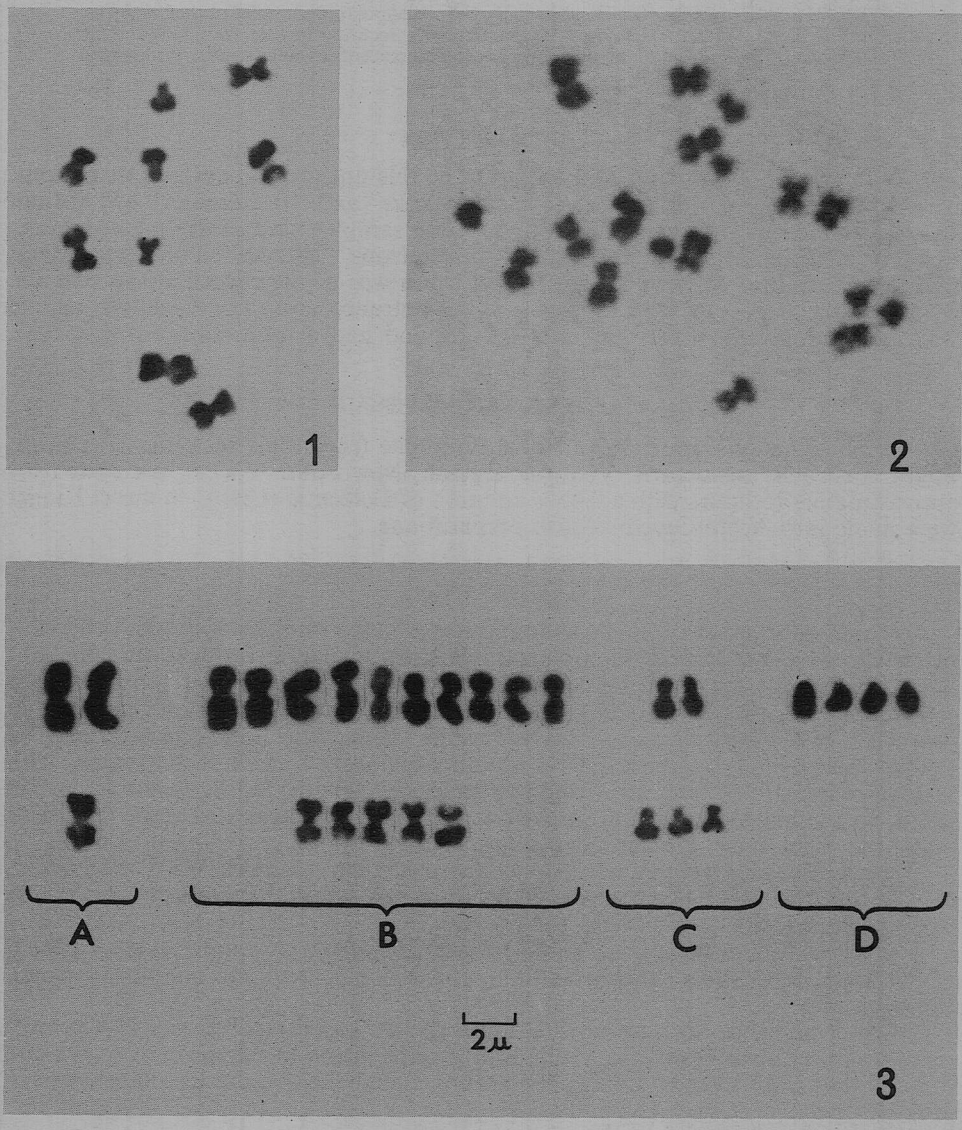

PLATE I

(1) Haploid metaphase cell from sample taken 11 miles WSW of Euston, N.S.W.; (2) diploid metaphase cell from sample taken at Beaumaris, Victoria.; (3) karyograms of Beaumaris (above, diploid) and Euston (below, haploid) samples with the chromosomes in groups referred to in text arranged in alphabetical order. Euston group C comprises chromosomes presumed homologous with Beaumaris C and D groups.

Discussion

The difference in chromosome morphology noted in the small chromosomes of the Beaumaris and Euston karyotypes does not in itself demonstrate differentiation at the specific level. In a morabine grasshopper (*Moraba viatica,* 17 chromosome race) for example, populations vary regionally in the extent of development of short arms on some of the acrocentric chromosomes (M. J. D. White, personal communication). Thus the present evidence cannot distinguish between whether two or more species are represented, or a single cytologically variable one.

Hauschteck (1963) mentions 11 pairs of chromosomes as occurring in an unnamed dolichoderine species, and Imai (1964) gives a haploid number of 14 for the Japanese ant species *Iridomyrmex itoi* Forel. It will be shown in a forthcoming paper that the karyotypes dealt with in this report resemble those of the bulk of the Australian *Iridomyrmex* species.

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